

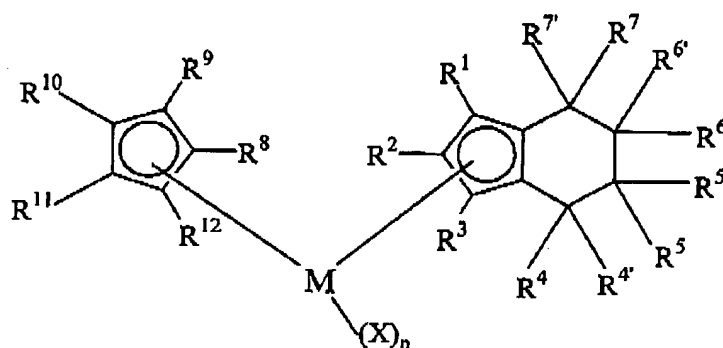
Application No. 10/828,953  
 Docket No. 2003U013.US  
 Reply to Office Action Dated 01/07/2005

### Amendments to the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application:

#### Listing of Claims:

1. (Currently amended) A method of producing polyethylene a copolymer of ethylene and 1-hexene in a fluidized bed gas-phase reactor, wherein as the mole ratio of 1-hexene to ethylene is varied in the reactor between 0.015 to 0.05, the density of the resultant polyethylene changes by less than 5 % and the  $I_2/I_1$  varies from 10 to 150, the method comprising:  
 combining in the fluidized bed gas-phase reactor ethylene and 1-hexene ~~at least one  $\alpha$ -olefin selected from  $C_3$  to  $C_{10}$   $\alpha$ -olefins~~, an activator, and a metallocene catalyst compound to produce a polyethylene; wherein the metallocene catalyst compound is selected from:



wherein M is a Group 4 atom; X is a leaving group; n is an integer from 0 to 3;  
 and

R<sup>1</sup> to R<sup>12</sup> are independently selected from the group consisting of hydrides, halogens, hydroxy, C<sub>1</sub> to C<sub>6</sub> alkoxys, C<sub>1</sub> to C<sub>6</sub> alkenyls, and C<sub>1</sub> to C<sub>10</sub> alkyls, provided that the tetrahydroindenyl is substituted; and

~~characterized in that when the comonomer is 1-hexene, and the mole ratio of 1-hexene to ethylene combined is varied between 0.015 to 0.05, the density of the resultant polyethylene changes by less than 5 % and the  $I_2/I_1$  varies from 10 to 150.~~

Application No. 10/828,953

Docket No. 2003U013.US

Reply to Office Action Dated 01/07/2005

2. (Original) The method of Claim 1, further characterized in that the  $I_{21}/I_2$  of the polyethylene varies from 15 to 100.
3. (Original) The method of Claim 1, wherein  $R^1$  to  $R^{12}$  are groups selected from the group consisting of hydride and  $C_1$  to  $C_{10}$  alkyls.
4. (Original) The method of Claim 1, wherein  $R^1$  to  $R^{12}$  are groups selected from the group consisting of hydride and  $C_1$  to  $C_5$  alkyls.
5. (Original) The method of Claim 1, wherein  $R^1$  to  $R^4$  and  $R^7$  to  $R^{12}$  are groups selected from the group consisting of hydride and  $C_1$  to  $C_{10}$  alkyls, and  $R^5$ ,  $R^5'$ ,  $R^6$ , and  $R^6'$  groups are hydride.
6. (Cancelled)
7. (Original) The method of Claim 1, characterized in that when the mole ratio of 1-hexene to ethylene combined is varied from 0.02 to 0.05, the density of the resultant polyethylene changes by from less than 2 %.
8. (Original) The method of Claim 1, further characterized in that when the mole ratio of 1-hexene to ethylene combined is varied from 0.02 to 0.05 the amount of methyl groups per 1000 carbon atoms of the polyethylene produced therein is from less than 20.
9. (Original) The method of Claim 1, further characterized in that when the mole ratio of 1-hexene to ethylene combined is varied from 0.02 to 0.05 the amount of comonomer incorporated into the polyethylene produced therein ranges from less than 12 wt% of the total weight of the polyethylene.
10. (Original) The method of Claim 1, wherein the activator and metallocene catalyst compound are supported on a carrier material.

Application No. 10/828,953

Docket No. 2003U013.US

Reply to Office Action Dated 01/07/2005

11. (Original) A polyethylene produced by the method of any one of Claims 1 through 10 having an  $I_{21}/I_2$  value of from 10 to 300, an  $M_w/M_n$  of 1.9 to 6, and a density of from 0.88 to 0.97 g/cm<sup>3</sup>.

12-22 (Cancelled)